EDWARD DU

408-421-5741 • ed.du.email@gmail.com • https://www.linkedin.com/in/edwarddu19/ • https://github.com/eddyiwnl

SUMMARY

- Computer science student with work experience in software engineering and research.
- Strong interest in computer vision, data science, and flight software.

EDUCATION

M.S., Computer Science   Anticipated Graduation: December 2024
California Polytechnic State University, San Luis Obispo, CA
B.S., Computer Science, minor in Data Science   Sept 2019 – June 2023
California Polytechnic State University, San Luis Obispo, CA   3.714 GPA
Relevant Coursework: Linear Algebra, Data Science Capstone, Computer Vision, Deep Learning, Artificial Intelligence, Introduction to Database Systems, Introduction to Distributed Computing, Advanced Algorithm Design and Analysis

TECHNICAL SKILLS

Proficient: Python(NumPy, Pandas, scikit-learn, tensorflow, PyTorch), Java, React.js
Familiar: C, R, HTML, CSS, Node.js, Apache Spark, Kotlin, Racket, Hadoop, CUDA, SQL

EXPERIENCE

PolySat, San Luis Obispo, CA: Software Engineer   March 2021 - Present
- Worked on the ADCS subsystem's star identifier algorithm using the Yale Bright Star Catalog v5 to generate the database.
- Researched filesystem and hardware upgrades for a new system board (Linux 2 to Linux 5).
- Optimized calculations on luminosity and RGB from photos to save computation time.
- Leveraged knowledge in C, Python (NumPy, SciPy), and Git.

GATO365/Cal Poly Statistics Department, San Luis Obispo, CA: SWE Intern   June 2022 - September 2022
- Created an interactive R Shiny web app to teach statistical inference methods, helping 100+ local students.
- Accessed the Census Bureau's API to map demographics for US counties.
- Leveraged knowledge in R (tidycensus, plotly, shiny).

Cal Poly Engineering Department, San Luis Obispo, CA: Undergraduate Researcher   June 2021 - September 2021
- Created a trade study to determine which type of flash memory to use on the new system board.
- Wrote code to perform periodic CubeSat watchdog taps and 22-day reboot cycles on the MSP430.
- Developed a capabilities document and a work-breakdown structure for hardware upgrades by subsystem.
- Leveraged knowledge in C, Assembly, Linux OS, and Systems Programming.
- Project Overview Link: https://surp.calpoly.edu/2021/next-gen-avionics/

PROJECTS

HDR-NeRF--: Learning HDR View Synthesis Without Known Exposure Parameters   September 2022 - Present
Our paper got accepted for presentation at the CVPR 2023 workshop, XRNeRF: Advances in NeRF for the Metaverse.
- Introduced new constraints to the tone mapping function to ensure monotonicity.
- Ensure that exposure parameters are learnable and optimized exposure parameters separately for each color band.
- Outperformed previous works such as NeRF, NeRF-W, HDR-NeRF, and HDR-Plenoxels.
- Newest NGP method beats HDR-NeRF and HDR-Plenoxels in efficiency by 90.335x and 15.317x, respectively.
- Leveraged knowledge in Python (NumPy, Pandas, PyTorch), CUDA, NeRF

Florida Estuary Biodiversity Analysis - Smithsonian Institute   January 2023 - June 2023
Collaborated in a team of four to develop an object detection model and desktop application that classifies and counts the specimen in their benthic soil samples.
- Created a desktop application with Electron that integrates our object detector and allows for manual quality control.
- Used Photoshop tools (blurring, noise generation) to create artificial data that mimics true data.
- Hypertuned a Faster R-CNN(ResNet-50 RPN Backbone) that yielded a mAP of 0.583.
- Leveraged knowledge in Photoshop, Python (PyTorch Lightning, NumPy), React.js, and Electron.
Github Link: https://github.com/eddyiwnl/Ecology_Application

CaII Absorption Line Detection   January 2019 - September 2019
Identified 1260 CaII$\lambda\lambda$ 3934, 3969 doublets from the Sloan Digital Sky Survey (SDSS) Data Release 14.
- Obtained a 73.9% accuracy using an AlexNet with 5 convolutional layers and 3 pooling layers
- Generated artificial spectra training sets, binned by their emission redshift range, and performed an IPCA fit on each bin.
- Preprocessed data by removing wrongly identified objects and adding missing coordinates.
- Leveraged knowledge in Python (Tensorflow, Keras, NumPy, SciPy, Astropy, Scikit-learn IPCA)
Github Link: https://github.com/eddyiwnl/CaII-ConvNet